SPEGIS (*Streptococcus Pneumoniae Expression of Genes In Space*)

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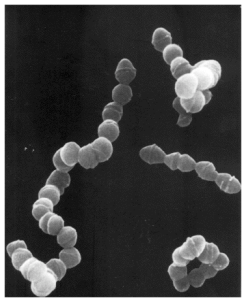


Streptococcus pneumoniae

Objective:

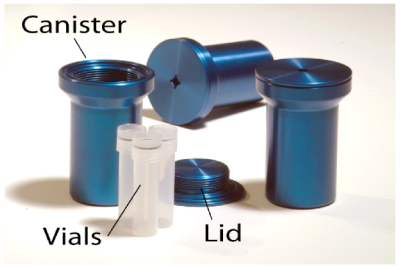
- Identify and characterize *S. pneumonia* genes and proteins that are differentially expressed in low shear models and in space flight.
- Investigate the gene and protein expression patterns of known virulence genes or virulence properties for alterations due to space flight or low shear environment growth.

Relevance/Impact:

- *S. pneumoniae* is a commensal respiratory microbe carried by approximately 40% of the healthy population and is an opportunistic pathogen in individuals with reduced immune function.
- It is anticipated that the results from this study will advance our understanding of the virulence mechanism of this bacteria and how it adapts to different environments.

Development Approach:

- Developed a new canister/vial system to culture bacteria at +37 degrees C and then at specific time points during exponential growth, freeze a set of cultures to preserve any changes; recover frozen specimens for post-flight for studies.
- Launched on STS-118 (13A.1; August 8, 2007, returned August 21, 2007).
- Flight samples were returned to the PI laboratory on 8/28/07 for post flight analysis.



SPEGIS ARC Canisters and cryovials

ISS Resource Requirements

Accommodation (carrier)	Middeck, MERLIN, MELFI
Upmass (kg) (w/o packing factor)	0.28
Volume (m^3) (w/o packing factor)	0.0001
Power (kw) (peak)	Powered & Passive Cold Stowage
Crew Time (hrs) (installation/operations)	0.35
Launch/Increment	13A.1/Increment 15

Project Life Cycle Schedule

Milestones	PDR	CDR	CT	Safety	FRR	Launch	Ops	Return	Final Report
Actual/ Baseline	11/15/06	11/15/06	3/1/07	3/15/07	6/29/07	8/8/07	Sortie	Sortie	Return + 12m